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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,995	01/18/2002	Thomas E. McWhorter	CDG-101US	9137

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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,995

Applicant(s)

MCWHORTER ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-38 is/are pending in the application.
- 4a) Of the above claim(s) 20-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-19 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 26, 2006 has been entered.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-29, 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the instant specification, one aspect of the claimed invention is to permit at least 90% by weight of the alkali metal chlorate to react with the inorganic acid to produce gaseous chlorine, chlorine dioxide and steam (note page 10, last paragraph). The instant specification also discloses that hydrochloric acid and sodium chlorate

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participate in two competing reactions (note the two reactions at the top of page 6).

However, it is stated that “[T]hese goals are achieved by mixing the reagents in approximately stoichiometric ratios to complete both the reaction that favors production of chlorine dioxide and the competing reaction that produces chlorine but no chlorine dioxide” (note paragraph bridging pages 12-13). Since the stoichiometric ratios in these two reactions are different, it is unclear how the stoichiometric ratios can be selected to satisfy both reactions. Since it is unclear how the stoichiometric ratios can be selected, it is also unclear how to ensure “at least 90wt% by weight of the alkali metal chlorate” is reacted with inorganic acid.

It is also disclosed that “the reactors are sized so that, at the maximum production rate, the reaction is essentially complete when the solution exits each stage of the process” (note page 16, lines 8-11) and “[I]f the process is designed so that the ratios of the raw materials (e.g. HCl/chlorate solution) injected into each section is constant and the production rate is controlled by the rate at which reagents are added to the reactor in this proportion, then the ratio of products (chlorine/chlorine dioxide) produced in the reactor segment will be constant so long as the reactor is sized so that the reaction is essentially complete before the reacting solution exits the reactor (note page 19, lines 21-26), however, because it is unclear how the ratio of the raw materials is selected, how to ensure the reaction is completed, then it would also be unclear how the reactor is sized or how to control the ratio of products.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10, 16-17, 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, there is no antecedent basis for "each of said reactors".

In claims 16-17, it is unclear what is required by "to one of".

Claim 21 is indefinite because it depends on cancelled claim 2.

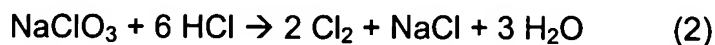
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Bielz et al (4,372,939).

Bielz '939 a process for producing chlorine dioxide wherein alkali metal chlorate solution is reacted with hydrochloric acid in a reactor through which air stream is passed countercurrent to the alkali metal chlorate (note claim 1). Bielz '939 teaches that the efficiency of the process depends on the following reactions:



Normally, the reaction expressed by equation (1) predominates. The reaction expressed by equation (2) increases as the chloride concentration increases (note column 1, lines 45-57). The chlorine dioxide reactor would have an efficiency of 100% if there were no reactions according to reaction (2). Thus, when the reaction has an efficiency of 92% as stated below, the final product would be a mixture of chlorine dioxide and chlorine.

As disclosed in the sole Example, 8 metric ton of chlorine dioxide are produced from 13.76 metric tons of alkali metal chlorate with an efficiency of 92%. This value is within the claimed range of "at least 90%". The chlorine dioxide is absorbed into an aqueous solution in an absorber (note the Figure, absorber 3).

The process of Bielz '939 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13, 21, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bielz '939, optionally further in view of Kesting (2,664,341).

Bielz '939 discloses a process of producing chlorine dioxide as stated in the above rejection.

The difference is Bielz '939 does not specifically disclose the process conditions, such as the concentration of the HCl, the initial concentration of the alkali metal chlorate, etc. However, it would have been obvious to one of ordinary skill in the art to optimize these process conditions for the process of Bielz '939 in order to obtain the best results.

Bielz '939 further discloses that chlorine dioxide is normally produced where it is used (note column 1, lines 8-10). Since chlorine dioxide is a well known disinfectant, it would have been obvious to one of ordinary skill in the art to use the chlorine dioxide solution produced by Bielz '939 in any known and conventional disinfecting process.

Optionally, Kesting '341 can be applied to teach the use of multiple vessels in the process of producing chlorine dioxide.

Optionally, Rosenblatt '354 can be applied to teach the use of a mixed stream of chlorine and chlorine dioxide, sometimes with ammonia, to disinfect and preoxidize drinking water while minimize production of THMs and HAAs (note column 2, lines 50-54).

It would have been obvious to one of ordinary skill in the art to optimize the process condition in Bielz '939 in order to obtain a mixture of chlorine and chlorine dioxide as suggested by Rosenblatt '354 because such mixed stream would interact in synergistic ways to accomplish disinfection of drinking water (note Rosenblatt '354, column 5, lines 16-21).

Applicant's arguments and declaration filed January 26, 2006 have been fully considered but they are not persuasive.

The 132 Declaration by Mr. Gilbert Gordon, filed January 26, 2006 has been considered but it is not persuasive because it contains no facts or evidence to support the statement as stated in item 11 of the Declaration.

All previous art rejections are withdrawn in view of Applicants' amendment to the claims and Charles '899 is no longer available as prior art in view of the 131 Declaration filed by Mr. Simmons.

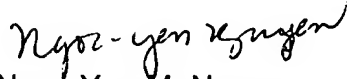
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 or (571) 273-8300.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn

March 20, 2006